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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,990	10/29/2003	Howard E. Rhodes	M4065.0732/P732	5298

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street, NW
Washington, DC 20037

EXAMINER

TRAN, MAI HUONG C

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,990

Applicant(s)

RHODES, HOWARD E.

Examiner

Mai-Huong Tran

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 and 134-136 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-61 and 134-136 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-40 and 134-136 are rejected under 35 U. S. C. § 102 (b) as being anticipated by U.S. Patent No. 5,898,196 to Hook et al.

Regarding to claims 1-21, Hook discloses an image device with a photosensor comprising at least one isolation trench (col. 3, line 36) provided in a substrate 24 having a first conductivity type, the substrate having a first dopant concentration; and a doped region 34 having the first conductivity type surrounding at least a portion of the trench (col. 3, line 36) in the substrate, the doped region having a second dopant concentration; and a photosensitive region formed approximately less than 0.30 μ (fig. 2a, col. 3).

Regarding to claims 22-40, an image structure comprising a trench isolation region (col. 3, line 36) surrounded at least in part by a first doped region with a first conductivity type having a first impurity implant dose, wherein the first doped region is

surrounded by a second doped region of the first conductivity type having a second impurity dose implant concentration; and a charge collection region with a second conductivity type formed to be approximately less than $0.30\ \mu$ away from the trench isolation region (fig. 2a, col. 3).

Regarding to claim 134, a processing system comprising: (i) a processor; and (ii) an imager pixel device coupled to the processor, the imager pixel device comprising a photosensor, the photosensor comprising: at least one isolation trench (col. 3, line 36) provided in a substrate having a first conductivity type, the substrate having a first dopant concentration; and a doped region having the first conductivity type surrounding at least a portion of the trench in the substrate, the doped region having a second dopant concentration (fig. 2a, col. 3).

Regarding to claim 135, a processing system comprising: (i) a processor; and (ii) an imager structure coupled to the processor, the imager structure comprising: a trench isolation region surrounded at least in part by a first doped region with a first conductivity type having a first impurity implant dose, wherein the first doped region is surrounded by a second doped region of the first conductivity type having a second impurity dose implant concentration; and a charge collection region with a second conductivity type formed to be approximately less than $0.30\ \mu$ away from the trench isolation region (fig. 2a, col. 3).

Regarding to claim 136, a photosensitive pixel comprising: a p-n-p photodiode comprising an n-type charge collection region formed in a p-type substrate and a p-type surface region located above the charge collection region, the p-type substrate having a first implant dose and the p-type surface region having a second implant dose; an isolation trench region laterally spaced apart by less than approximately $0.30\ \mu$ from the charge collection region; and a doped p-type implant region surrounding at least a portion of the isolation trench region, wherein the doped p-type implant region has a third implant dose (fig. 2a, col. 3).

Claims 41-61 are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent No. 6,483,163 to Isogai et al.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Regarding to claims 41-61, Isogai discloses a photodiode structure comprising a first doped region 13 having a first conductivity type formed in a substrate, the first doped region in contact with a second doped region 101 having the first conductivity type; a third doped region 12 with a second conductivity type that accumulates photo-generated charge formed beneath the first doped region and adjacent to the second doped

region; and a fourth doped region 100 having the first conductivity type formed at least in part beneath the second doped region (col. 20, lines 40-48, and figs. 3-4).

Conclusion

Any inquiry concerning this communication on earlier communications from the examiner should be directed to Mai-Huong Tran, (571) 272-1796. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 6:30 PM. The examiner's supervisor, David Nelms can be reached on (571) 272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Mai-Huong Tran